

09/889347

Practitioner's Docket No. 770P009746-US(PCT)

CHAPTER II

Preliminary Classification:

JC05 Rec'd PCT/PTO 16 JUL 2001

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P., § 601, 7th ed.

TRANSMITTAL LETTER
TO THE UNITED STATES ELECTED OFFICE (EO/US)
(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/US00/01294	19 January 2000	19 January 1999

TITLE OF INVENTION

ELECTRONICALLY CONTROLLED SEALING TAPE DISPENSER AND METHOD

APPLICANT(S)

Roger F. LAY, Allen A. CROWE, Joseph J. CIEPLAK

Box PCT

Assistant Commissioner for Patents

Washington D.C. 20231

ATTENTION: EO/US

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*

(When using Express Mail, the Express Mail label number is mandatory;
 Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

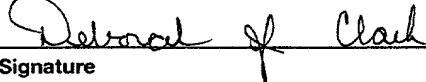
deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

37 C.F.R. § 1.8(a)

with sufficient postage as first class mail. as "Express Mail Post Office to Addressee"
 Mailing Label No. EL627430946US (mandatory)

TRANSMISSION

facsimile transmitted to the Patent and Trademark Office, (703) _____


 Signature

Deborah J. Clark

(type or print name of person certifying)

Date: 16 July 2001

* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

09/889347

JC18 Rec'd PCT/PTO 16 JUL 2001

NOTE: To avoid abandonment of the application, the applicant shall furnish to the USPTO, not later than 20 months from the priority date: (1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the USPTO; and (2) the basic national fee (see 37 C.F.R. § 1.492(a)). The 30-month time limit may not be extended. 37 C.F.R. § 1.495.

WARNING: Where the items are those which can be submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. § 1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing—See 37 C.F.R. § 1.8).

NOTE: Documents and fees must be clearly identified as a submission to enter the national state under 35 U.S.C. § 371 otherwise the submission will be considered as being made under 35 U.S.C. § 111. 37 C.F.R. § 1.494(f).

I. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. § 371:

- a. This express request to immediately begin national examination procedures (35 U.S.C. § 371(f)).
- b. The U.S. National Fee (35 U.S.C. § 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

09/889347

JC18 Rec'd PCT/PTO 16 JUL 2001

2. Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
<input type="checkbox"/> *	TOTAL CLAIMS 18	18 - 20 =	0	× \$18.00 =	\$ 0
	INDEPENDENT CLAIMS 1	1 - 3 =	0	× \$80.00 =	0
	MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$270.00	
BASIC FEE**	<input checked="" type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: <input checked="" type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 C.F.R. § 1.492(a)(4)) \$100.00 <input type="checkbox"/> and the above requirements are not met (37 C.F.R. § 1.492(a)(1)) \$690.00				100.00
	<input type="checkbox"/> U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: <input type="checkbox"/> has been paid (37 C.F.R. § 1.492(a)(2)) \$710.00 <input type="checkbox"/> has not been paid (37 C.F.R. § 1.492(a)(3)) \$1000.00 <input type="checkbox"/> where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 C.F.R. § 1.492(a)(5)) \$860.00				
	Total of above Calculations			=	100.00
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Assertion must be made. (note 37 C.F.R. § 1.27)				-
	Subtotal				
	Total National Fee			\$	100.00
	Fee for recording the enclosed assignment document \$40.00 (37 C.F.R. § 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				
TOTAL	Total Fees enclosed			\$	100.00

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 3 of 9)

09/889347

JC18 Rec'd PCT/PTO 16 JUL 2001

*See attached Preliminary Amendment Reducing the Number of Claims.

- Attached is a check money order in the amount of \$ 100.00
- Authorization is hereby made to charge the amount of \$ _____
 to Deposit Account No. 16-1350
 to Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: Credit card information should not be included on this form as it may become public.

- Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

A duplicate of this paper is attached.

WARNING: "To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date: * * * (2) the basic national fee (see § 1.492(a)). The 30-month time limit may not be extended." 37 C.F.R. § 1.495(b).

WARNING: If the translation of the international application and/or the oath or declaration have not been submitted by the applicant within thirty (30) months from the priority date, such requirements may be met within a time period set by the Office. 37 C.F.R. § 1.495(b)(2). The payment of the surcharge set forth in § 1.492(e) is required as a condition for accepting the oath or declaration later than thirty (30) months after the priority date. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than thirty (30) months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of § 1.136 apply to the period which is set. Notice of Jan. 3, 1993, 1147 O.G. 29 to 40.

Assertion of Small Entity Status

Applicant hereby asserts status as a small entity under 37 C.F.R. § 1.27.

NOTE: 37 C.F.R. § 1.27(c) deals with the assertion of small entity status, whether by a written specific declaration thereof or by payment as a small entity of the basic filing fee or the fee for the entry into the national phase as states:

"(c) Assertion of small entity status. Any party (person, small business concern or nonprofit organization) should make a determination, pursuant to paragraph (f) of this section, of entitlement to be accorded small entity status based on the definitions set forth in paragraph (a) of this section, and must, in order to establish small entity status for the purpose of paying small entity fees, actually make an assertion of entitlement to small entity status, in the manner set forth in paragraphs (c)(1) or (c)(3) of this section, in the application or patent in which such small entity fees are to be paid.

(1) Assertion by writing. Small entity status may be established by a written assertion of entitlement to small entity status. A written assertion must:

- (i) Be clearly identifiable;
(ii) Be signed (see paragraph (c)(2) of this section); and

(iii) Convey the concept of entitlement to small entity status, such as by stating that applicant is a small entity, or that small entity status is entitled to be asserted for the application or patent. While no specific words or wording are required to assert small entity status, the intent to assert small entity status must be clearly indicated in order to comply with the assertion requirement.

(2) Parties who can sign and file the written assertion. The written assertion can be signed by:

(i) One of the parties identified in §§ 1.33(b) (e.g., an attorney or agent registered with the Office), §§ 3.73(b) of this chapter notwithstanding, who can also file the written assertion;

(ii) At least one of the individuals identified as an inventor (even though a §§ 1.63 executed oath or declaration has not been submitted), notwithstanding §§ 1.33(b)(4), who can also file the written assertion pursuant to the exception under §§ 1.33(b) of this part; or

(iii) An assignee of an undivided part interest, notwithstanding §§ 1.33(b)(3) and 3.73(b) of this chapter, but the partial assignee cannot file the assertion without resort to a party identified under §§ 1.33(b) of this part.

09/889347

JM8 Rec'd PCT/PTO 16 JUL 2001

(3) Assertion by payment of the small entity basic filing or basic national fee. The payment, by any party, of the exact amount of one of the small entity basic filing fees set forth in §§ 1.16(a), (f), (g), (h), or (k), or one of the small entity basic national fees set forth in §§ 1.492(a)(1), (a)(2), (a)(3), (a)(4), or (a)(5), will be treated as a written assertion of entitlement to small entity status even if the type of basic filing or basic national fee is inadvertently selected in error.

(i) If the Office accords small entity status based on payment of a small entity basic filing or basic national fee under paragraph (c)(3) of this section that is not applicable to that application, any balance of the small entity fee that is applicable to that application will be due along with the appropriate surcharge set forth in §§ 1.16(e), or §§ 1.16(l).

(ii) The payment of any small entity fee other than those set forth in paragraph (c)(3) of this section (whether in the exact fee amount or not) will not be treated as a written assertion of entitlement to small entity status and will not be sufficient to establish small entity status in an application or a patent."

3. A copy of the International application as filed (35 U.S.C. § 371(c)(2)):

NOTE: Section 1.495 (b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date." Notice of Jan. 7, 1993, 1147 O.G. 29 to 40, at 35-36. See item 14c below.

- a. is transmitted herewith.
- b. is not required, as the application was filed with the United States Receiving Office.
- c. has been transmitted
 - i. by the International Bureau.
 - ii. by applicant on _____. (Date)

Date of mailing of the application (from form PCT/1B/308):

20 July 2000

4. A translation of the International application into the English language (35 U.S.C. § 371(c)(2)):

- a. is transmitted herewith.
- b. is not required as the application was filed in English.
- c. was previously transmitted by applicant on _____. (Date)
- d. will follow.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 5 of 9)

5. Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. § 371(c)(3)):

NOTE: *The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.*

- a. are transmitted herewith.
- b. have been transmitted
 - i. by the International Bureau.

Date of mailing of the amendment (from form PCT/1B/308):

- ii. by applicant on _____ (Date)
- c. have not been transmitted as
 - i. applicant chose not to make amendments under PCT Article 19.
Date of mailing of Search Report (from form PCT/ISA/210.):
5/23/00
 - ii. the time limit for the submission of amendments has not yet expired. The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.

6. A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. § 371(c)(3)):

- a. is transmitted herewith.
- b. is not required as the amendments were made in the English language.
- c. has not been transmitted for reasons indicated at point 5(c) above.

7. A copy of the international examination report (PCT/IPEA/409)

- is transmitted herewith.
- is not required as the application was filed with the United States Receiving Office.

8. Annex(es) to the international preliminary examination report

- a. is/are transmitted herewith.
- b. is/are not required as the application was filed with the United States Receiving Office.

9. A translation of the annexes to the international preliminary examination report

- a. is transmitted herewith.
- b. is not required as the annexes are in the English language.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 6 of 9)

10. An oath or declaration of the inventor (35 U.S.C. § 371(c)(4)) complying with 35 U.S.C. § 115
- a. was previously submitted by applicant on _____, (Date)
 - b. is submitted herewith, and such oath or declaration
 - i. is attached to the application.
 - ii. identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. § 1.70.
 - c. will follow.

II. Other document(s) or information included:

11. An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
- a. is transmitted herewith.
 - b. has been transmitted by the International Bureau.
Date of mailing (from form PCT/IB/308): _____
 - c. is not required, as the application was searched by the United States International Searching Authority.
 - d. will be transmitted promptly upon request.
 - e. has been submitted by applicant on _____, (Date)
12. An Information Disclosure Statement under 37 C.F.R. §§ 1.97 and 1.98:
- a. is transmitted herewith.

Also transmitted herewith is/are:

- Form PTO-1449 (PTO/SB/08A and 08B).
- Copies of citations listed.
- b. will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. § 371(c).
- c. was previously submitted by applicant on _____, (Date)
13. An assignment document is transmitted herewith for recording.

A separate "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or FORM PTO 1595 is also attached.

09/889347

JC18 Rec'd PCT/PTO 16 JUL 2001

14. Additional documents:

- a. Copy of request (PCT/RO/101)
- b. International Publication No. WO 0041960
 - i. Specification, claims and drawing
 - ii. Front page only
- c. Preliminary amendment (37 C.F.R. § 1.121)
- d. Other
 - PCT/ISA/202; PCT/RO/106; PCT/IB/301; PCT/IB/304; PCT/IB/306;
 - PCT/IB/308; PCT/IB/332; PCT/IPEA/401; PCT/IPEA/408; PCT/IPEA/416

15. The above checked items are being transmitted

- a. before 30 months from any claimed priority date.
- b. after 30 months.

16. Certain requirements under 35 U.S.C. § 371 were previously submitted by the applicant on _____, namely:

AUTHORIZATION TO CHARGE ADDITIONAL FEES

WARNING: Accurately count claims, especially multiple defendant claims, to avoid unexpected high charges if extra claims are authorized.

NOTE: "A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

NOTE: "Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

- Please charge, in the manner authorized above, the following additional fees that may be required by this paper and during the entire pendency of this application:
- 37 C.F.R. § 1.492(a)(1), (2), (3), and (4) (filing fees)

WARNING: Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 8 of 9)

09/889347

JC18 Rsc'd PCT/PTO 16 JUL 2001

- 37 C.F.R. § 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid for these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

- 37 C.F.R. § 1.17 (application processing fees)
 37 C.F.R. § 1.17(a)(1)-(5) (extension fees pursuant to § 1.136(a)).
 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

- 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).



SIGNATURE OF PRACTITIONER

Clarence A. Green

(type or print name of practitioner)

PERMAN & GREEN, LLP

P.O. Address

425 Post Road, Fairfield, CT 06430 USA

Reg. No.: 24,622

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Customer No.: 2512

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Express Mail No. EL627430946US

In re Application of LAY et al.

INTERNATIONAL APPLICATION NO. PCT/US00/01294

INTERNATIONAL FILING DATE: 1/19/00

U.S. SERIAL NUMBER:

TITLE: ELECTRONICALLY CONTROLLED SEALING TAPE DISPENSER AND
METHOD

ATTORNEY DOCKET NO 770P009746-US(PCT)

Box PCT

The Commissioner of Patents and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

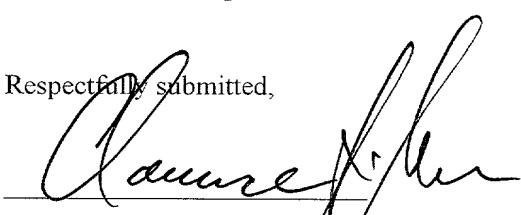
Please amend the above-identified, patent application as follows:

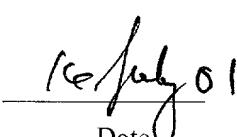
IN THE SPECIFICATION:

After the Title and before the first paragraph, please insert the following new paragraph:

This application claims the benefit of the earlier filed International Application No. PCT/US00/01294, International Filing Date, 19 January 2000, which designated the United States of America, and which international application was published under PCT Article 21(2) in English as WO Publication No WO 00/41960

Respectfully submitted,


Clarence A. Green Reg. No 24,622
PERMAN & GREEN, LLP
425 Post Road, Fairfield, CT 06430
(203) 259-1800
Customer No : 2512


Date

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09/889347

JC18 Rec'd PCT/PTO 16 JUL 2001

Electronically Controlled Sealing Tape

Dispenser and Method

5

Technical Field

The present invention relates to sealing tape dispensers generally and, more particularly, but not by way of limitation, to novel electronically controlled
10 sealing tape dispenser and method of use.

Background Art

Mechanical and electronically controlled sealing tape dispensers are widely used for measuring a selected
15 length of tape, cutting the tape, and also moistening the tape when required. The type of tape used with such machines can be paper, cloth, plastic, reinforced, or combinations of these, for example.

Previously known tape dispensers have certain
20 limitations. For one, the length of tape is typically determined by use of an encoder attached to a motor-driven shaft that presses against one side of the tape, while an idler wheel presses against the other side of the tape. This arrangement is subject to slippage, both
25 when the wheel starts rotating and when power is removed from the motor. The percentage slippage varies with the length of tape being dispensed. Also, the tape cannot be cut instantaneously so the machine commands the tape to be cut before the selected length has been reached.
30 Errors in length can occur because of tape speed variations and the fact that more or less than the amount of expected tape can be dispensed because the tape speed is not factored into the method of determining when to cut the tape. To compensate for
35 these errors, it is common to set the tape dispenser to dispense a length of tape greater than necessary. While

this doesn't usually affect the sealing of a carton, for example, the unnecessary length results in extra cost.

Another limitation is that, although tape dispensers typically have means to add or subtract an increment of length and also have means to double or halve a selected length of tape, conventional tape dispensers have no means to double or halve the increment along with the selected length of tape.

A further limitation of conventional tape dispensers is that, if a length of tape different from the length of tape previously dispensed is desired, it is necessary to press the necessary length selection button(s) to have the second length dispensed. This requires additional time on the part of the operator and also offers the opportunity for the operator to request the wrong length of tape, thus creating unnecessary cost and/or waste. Some machines partially overcome this problem by providing a switch to select one length of tape or another.

Accordingly, it is a principal object of the invention to provide means and method to more accurately measure the length of tape being dispensed from a tape dispenser.

It is a further object of the invention to provide means and method to double or halve an increment of length added to or subtracted from a selected length of tape.

It is an additional object of the invention to provide means and method for automatically dispensing different lengths of tape without having to re-enter desired lengths to be dispensed.

It is another object of the invention to provide such means and method that are economically employed.

Other objects of the present invention, as well as particular features, elements, and advantages thereof, will be elucidated in, or be apparent from, the following description and the accompanying drawing figures.

5

Disclosure of Invention

The present invention achieves the above objects, among others, by providing, in a preferred embodiment, 10 an electronically controlled sealing tape dispenser, comprising: a housing; means disposed in said housing to select a first selected length of sealing tape to be dispensed; means disposed in said housing to dispense said first selected length of sealing tape; and 15 electronic means to control dispensing of said first selected length of sealing tape.

Brief Description of Drawings

Understanding of the present invention and the 20 various aspects thereof will be facilitated by reference to the accompanying drawing figures, submitted for purposes of illustration only and not intended to define the scope of the invention, on which:

Figure 1 is an isometric view of an electronic 25 tape dispenser in which the present invention may be employed.

Figure 2 is a fragmentary side elevational view of a conventional tape dispenser.

Figure 3 is a fragmentary side elevational view of 30 a tape dispenser according to the present invention.

Figure 4 is a block diagram of a control system according to the present invention.

Figure 5 is a top plan view of the tape dispenser keypad according to the present invention.

35 Figure 6 shows the sequence of steps for programming a tape dispenser of the present invention to automatically dispense desired lengths of tape.

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Figure 7 is a block diagram of the control system of Figure 4 operatively connected to a remote host computer.

Figure 8 is a schematic/block diagram showing a plurality of electronic tape dispensing machines operatively connected to the host computer of Figure 7.

Best Mode for Carrying Out the Invention

Reference should now be made to the drawing figures, on which similar or identical elements are given consistent identifying numerals throughout the various figures thereof, and on which parenthetical references to figure numbers direct the reader to the view(s) on which the element(s) being described is (are) best seen, although the element(s) may be seen also on other views.

Figure 1 illustrates an electronically controlled tape dispenser of the type in which the present invention may be employed, the tape dispenser being generally indicated by the reference numeral 20.

Tape dispenser 20 includes a housing 30 having an external keypad 32 that includes a plurality of push buttons, as at 34. Push buttons 34 are used to select tape length to be dispensed from tape dispenser 20 and to perform other functions, as is described more fully below. Tape dispenser 20 further includes a water supply bottle 40, a water heater control 42, a slot 44 through which the tape (not shown) is dispensed, and a water applicator 46 for use when the tape is to be moistened. Electronic control circuitry is disposed within portion 50 of housing 30.

The elements of tape dispenser 20 described above are common both to conventional tape dispensers and to a tape dispenser in which the present invention may be employed.

Figure 2 illustrates the side of a conventional tape dispenser 60 that includes protruding therethrough a drive wheel shaft 62 and an idler wheel shaft 64. As

shaft 62 is coupled to an electric motor (not shown). To dispense tape 70 from tape dispenser 60, the idler wheel (not shown) mounted on idler wheel shaft 64 is raised by energization of a solenoid (not shown),

5 creating a nip between the idler wheel and the drive wheel (not shown) mounted on drive wheel shaft 62. Rotation of drive wheel shaft 62 thus causes tape 70 to be dispensed from tape dispenser 60. An apertured encoder wheel 80 is mounted to drive wheel shaft 62 to

10 rotate with the drive wheel shaft and an optical sensor 82 detects the rotation of the encoder wheel and provides an output signal representative of the number of rotations of the wheel. This signal is then used to determine the length of tape 70 dispensed. As is noted

15 above, however, slippage occurs between the drive wheel and tape 70, the percentage slippage varying in proportion to the length of the tape dispensed and, thus, the signal does not give an accurate measurement of the length of tape 70 dispensed. Furthermore, error

20 is introduced when tape 70 is cut, as is also noted above.

Figure 3 illustrates the approach of the present invention to overcoming the problem of errors in sensed dispensed tape length. Here, a tape dispenser 60' has a

25 drive wheel shaft 62' and an idler wheel shaft 64', all with the same forms and functions as described above with reference to Figure 2. In this case, however, an apertured encoder wheel 80' is mounted on idler wheel shaft 64'. An optical sensor 82' senses the rotation of

30 idler wheel shaft 64' and provides a much more accurate measurement of the length of tape 70' than does optical sensor 80 (Figure 2), since any movement of the tape will be sensed. Of course, other types of encoder devices may be employed as well.

35 Figure 4 illustrates a control system according to the present invention, the control system being indicated generally by the reference numeral 100. Control system 100 includes a tape dispensing/cutting

discussed above, and a solenoid 106 that operates a blade to cut the tape. Control system 100 also includes a tape machine controller board 120 that has a microcontroller 122 with memories 124 and 126.

- 5 Microcontroller 122 is connected to tape dispensing/cutting mechanism 102 through motor control 130 and solenoid control 132. Microcontroller 122 is also connected to an optical tape sensor 140 through a tape sensor interface 142, the optical tape sensor being provided to sense the presence or absence of tape near its exit from the tape machine. Microcontroller 122 is further connected to tape length encoder 80'/82' (Figure 3) through a length encoder interface 150, to keyboard, or keypad, 32 through a keyboard interface 152, and to a 10 foot switch interface 154 that permits the tape machine to dispense tape when a foot switch (not shown) is depressed. A power supply 156 provides electrical power to the various components of control system 100.
- 15

Figure 5 illustrates keypad 32 and plurality of push buttons, as at 34. Push buttons 34 that have numerals thereon can be depressed to command tape machine 20 (Figure 1) to dispense tape of a selected length. Push button 160 with "+" thereon adds an increment to the length of tape dispensed, push button 162 with "-" thereon subtracts an increment from the length of tape dispensed, while push button 164 doubles or halves the length of tape dispensed. Whether the length is doubled or halved depends on the length of tape selected, with the lengths of shorter pieces being doubled and the lengths of longer pieces being halved. Push button 170 is used to select an automatic mode, discussed below, and depressing push button 172 will cause the tape machine to dispense tape as long as push button 172 is depressed. Push buttons 180 and 182 recall tape lengths tape previously entered into memory.

The present invention may provide a further method of improving tape length accuracy. In the present case, errors in tape length can be empirically determined.

(Figure 4) and the proper correction length can then be applied by microcontroller 122 for each length of tape selected. The data in memory 124 can take, for example, the form of a lookup table, with interpolation between 5 entries if desired, or it can take, for example, the form of an algorithm for continuously variable correction lengths.

Microcontroller 122 (Figure 4) can also be programmed to double or halve a selected length of tape 10 including any increment of length added to or subtracted from the selected length of tape. Thus, assume that the units on keypad 32 (Figure 5) were in inches and that one wished to dispense a piece of tape having a length of 26 inches. One could then, for example, depress push 15 button "12", then depress push button "+" twice to add two increments of one-half-inch each, and then press push button "2X". Now, when push button "REPEAT/START" is depressed, a piece of tape having a length of 26 inches will be dispensed.

20 The use of push button 170 and suitable programming of microcontroller 122 can produce automatic dispensing of tape from tape dispenser 20 (Figure 1). Push button 170, "A", or "AUTO" (Figure 5) toggles the tape dispenser between automatic and normal modes. A 25 buzzer can produce an audible beep when entering the automatic mode and when exiting back to normal mode. When the automatic mode is entered, the dispenser is ready to set up a tape sequence. Depressing push button 180, "REPEAT/START" (Figure 5), immediately after 30 entering automatic mode will skip setup and use the last stored sequence. If no sequence is stored, then a default sequence, e.g., repeating four-inch lengths is used.

To set up a length sequence, the user begins by 35 pressing push button 170 (Figure 5) to enter the automatic mode. The user then dispenses up to three pieces of tape of the length and in the order of the desired sequence. Microcontroller 122 (Figure 4) stores

- push button 180, "REPEAT/START" (Figure 5), to begin the automatic sequence, at which time the first piece of tape in the sequence is produced. When the first piece of tape is removed, the tape dispenser automatically
- 5 produces the second piece of tape in the sequence, and so on. The user actions and machine responses shown on Figure 6 indicate the process for setting up the tape dispenser to produce a continuous sequence of alternating 36- and 18-inch lengths of tape.
- 10 While the present invention is indicated, for illustrative and practical purposes, as being able to automatically produce up to three different lengths of tape to use, for example, an "H" pattern in sealing a carton, it will be understood that the present invention
- 15 may be employed to produce any number of different lengths if desired.

Figure 7 illustrates control system 100 operatively connected to a remote host computer, or controller, 200. Host computer may actually provide

20 control inputs for one or more of the functions of tape dispenser 20 and/or it may simply provide bookkeeping functions, such as tracking accumulated lengths of tape dispensed, the numbers of pieces of tape dispensed, the rate of use of the tape dispenser, or other items

25 relating to the use of the tape dispenser. This information can be used, for example, to determine when the roll of tape in tape dispenser 20 requires replacement.

It will be understood that RS-232 driver/receiver

30 transmission protocol may be used when host computer 200 is operatively connected only to tape dispenser 20 and that RS-485 driver/receiver transmission protocol may be used when more than one tape dispenser is operatively connected to the host computer. Transmission may be

35 over hard wired lines or it may be via RF communication means.

Figure 8 illustrates the latter situation noted immediately above in which host computer 200 is

dispensers 300 and 302. Of course, any number of tape dispensers may be operatively connected to host computer 200.

In the embodiments of the present invention
5 described above, it will be recognized that individual elements and/or features thereof are not necessarily limited to a particular embodiment but, where applicable, are interchangeable and can be used in any selected embodiment even though such may not be
10 specifically shown.

Terms such as "upper", "lower", "inner", "outer", "inwardly", "outwardly", and the like, when used herein, refer to the positions of the respective elements shown on the accompanying drawing figures and the present
15 invention is not necessarily limited to such positions.

It will thus be seen that the objects set forth above, among those elucidated in, or made apparent from, the preceding description, are efficiently attained and, since certain changes may be made in the above
20 construction and/or method without departing from the scope of the invention, it is intended that all matter contained in the above description or shown on the accompanying drawing figures shall be interpreted as illustrative only and not in a limiting sense.

25 It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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Claims

1. An electronically controlled sealing tape dispenser, comprising:
 - 5 (a) a housing;
 - (b) means disposed in said housing to select a first selected length of sealing tape to be dispensed;
 - (c) means disposed in said housing to dispense said first selected length of sealing tape; and
 - (d) electronic means to control dispensing of said first selected length of sealing tape.
- 15 2. An electronically controlled sealing tape dispenser, as defined in Claim 1, further comprising:
 - (a) an idler wheel fixedly mounted on an idler wheel shaft disposed in said housing, said idler wheel being disposed so as to rotate as said first selected length of sealing tape is dispensed; and
 - (b) means mounted on said idler wheel shaft to measure rotation of said idler wheel shaft and to output a signal to said electronic means representative of rotations of said idler wheel shaft.
- 25 3. An electronically controlled sealing tape dispenser, as defined in Claim 2, wherein: said means mounted on said idler wheel comprises an optical encoder.

4. An electronically controlled sealing tape dispenser, as defined in Claim 1, further comprising:

- (a) means to add or subtract an increment of sealing tape length to or from said first selected length of sealing tape; and
5 (b) means to double or halve length of said first selected length of sealing tape;

and wherein:

- 10 (c) said means to double or halve length of said first selected length of sealing tape also doubles or halves, respectively, said increment of sealing tape length.

15 5. An electronically controlled sealing tape dispenser, as defined in Claim 1, further comprising: means to automatically correct for errors in length of said first selected length of sealing tape.

20 6. An electronically controlled sealing tape dispenser, as defined in Claim 5, further comprising: electronic memory which includes therein correction lengths as a function of selected lengths of sealing tape.

25 7. An electronically controlled sealing tape dispenser, as defined in Claim 1, further comprising: means to automatically dispense from said sealing tape dispenser a second selected length of sealing tape after said first selected length of sealing tape is removed
30 and in response to said first selected length of sealing tape is removed from said electronically controlled sealing tape dispenser, without any other action on the part of an operator of said electronically controlled sealing tape dispenser.

8. An electronically controlled sealing tape dispenser, as defined in Claim 1, wherein: said electronic means includes first electronic controls disposed in said housing.

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9. An electronically controlled sealing tape dispenser, as defined in Claim 8, further comprising: remote second electronic controls operatively connected to said first electronic controls.

10 10. A method of electronically controlling a sealing tape dispenser, comprising:

- (a) determining a first selected length of sealing tape to be dispensed; and
- (b) employing electronic means to control dispensing of said first selected length of sealing tape.

15 11. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further comprising:

- (a) providing an idler wheel fixedly mounted on an idler wheel shaft disposed in a housing of said sealing tape dispenser, said idler wheel being disposed so as to rotate as said first selected length of sealing tape is dispensed; and
- (b) measuring rotation of said idler wheel shaft and outputting a signal to said electronic means representative of rotations of said idler wheel shaft.

25 30 35 12. A method of electronically controlling a sealing tape dispenser, as defined in Claim 11, further comprising: using an optical encoder to measure rotation of said idler wheel shaft.

13. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further comprising:

- 5 (a) adding or subtracting an increment of sealing tape length to or from said first selected length of sealing tape; and
- (b) means to double or halve length of said first selected length of sealing tape, including said increment of sealing tape length.

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14. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further comprising: automatically correcting for errors in length of said first selected length of sealing tape.

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15. A method of electronically controlling a sealing tape dispenser, as defined in Claim 14, further comprising: employing an electronic memory which includes therein correction lengths as a function of 20 selected lengths of sealing tape.

16. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further comprising: automatically dispensing from said sealing 25 tape dispenser a second selected length of sealing tape after said first selected length of sealing tape is removed and in response to said first selected length of sealing tape being removed from said electronically controlled sealing tape dispenser, without any other 30 action on the part of an operator of said electronically controlled sealing tape dispenser.

17. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further 35 comprising: providing said electronic means including first electronic controls disposed in said housing.

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18. A method of electronically controlling a sealing tape dispenser, as defined in Claim 10, further comprising: providing remote second electronic controls operatively connected to said first electronic controls.

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Electronically Controlled Sealing Tape
Dispenser and Method
Abstract

5 . In a preferred embodiment, an electronically controlled sealing tape dispenser (20, Fig. 1), including: a housing (30, Fig. 1)); apparatus (32, Fig. 1) disposed in the housing (30, Fig. 1) to select a first selected length of sealing tape (70, Fig. 2) to be
10 dispensed; apparatus (102, Fig. 4) disposed in the housing (30, Fig. 1) to dispense the first selected length of sealing tape (70, Fig. 4); and electronic apparatus (120, Fig. 4) to control dispensing of the first selected length of sealing tape (70, Fig. 4).

15

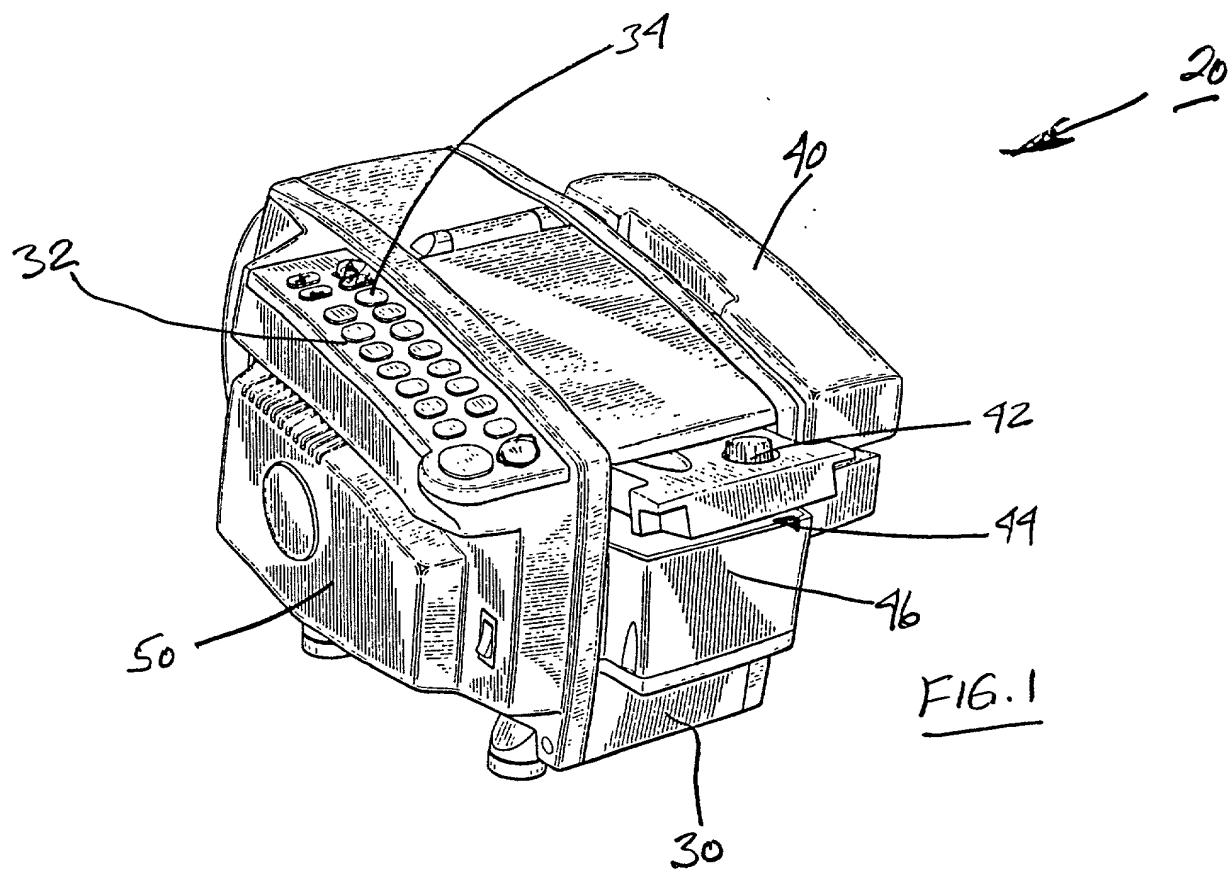
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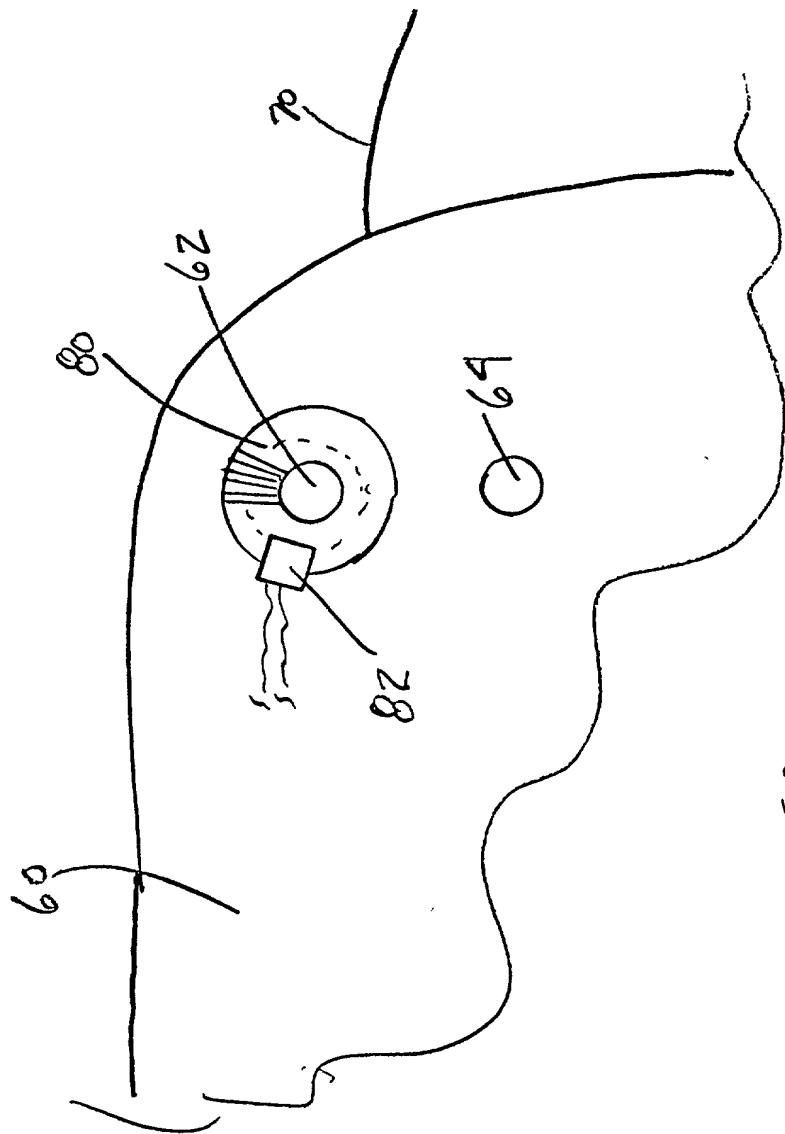
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F16.2
(prior art)

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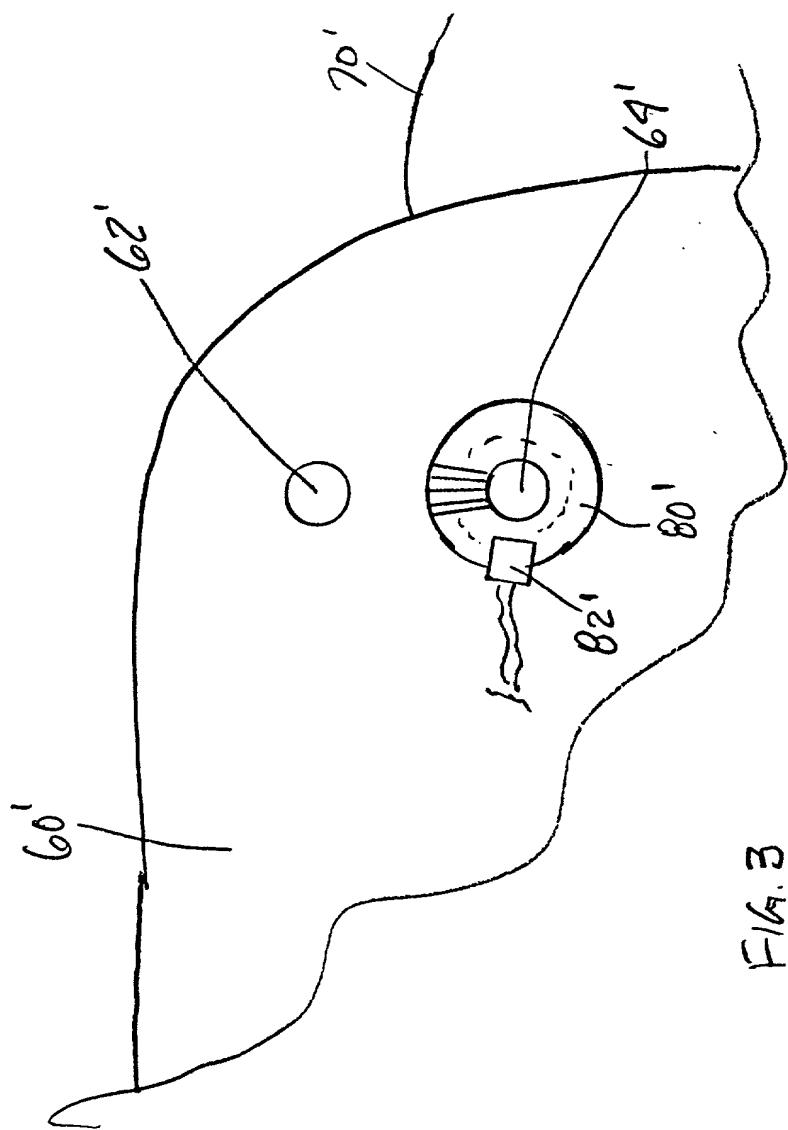


FIG. 3

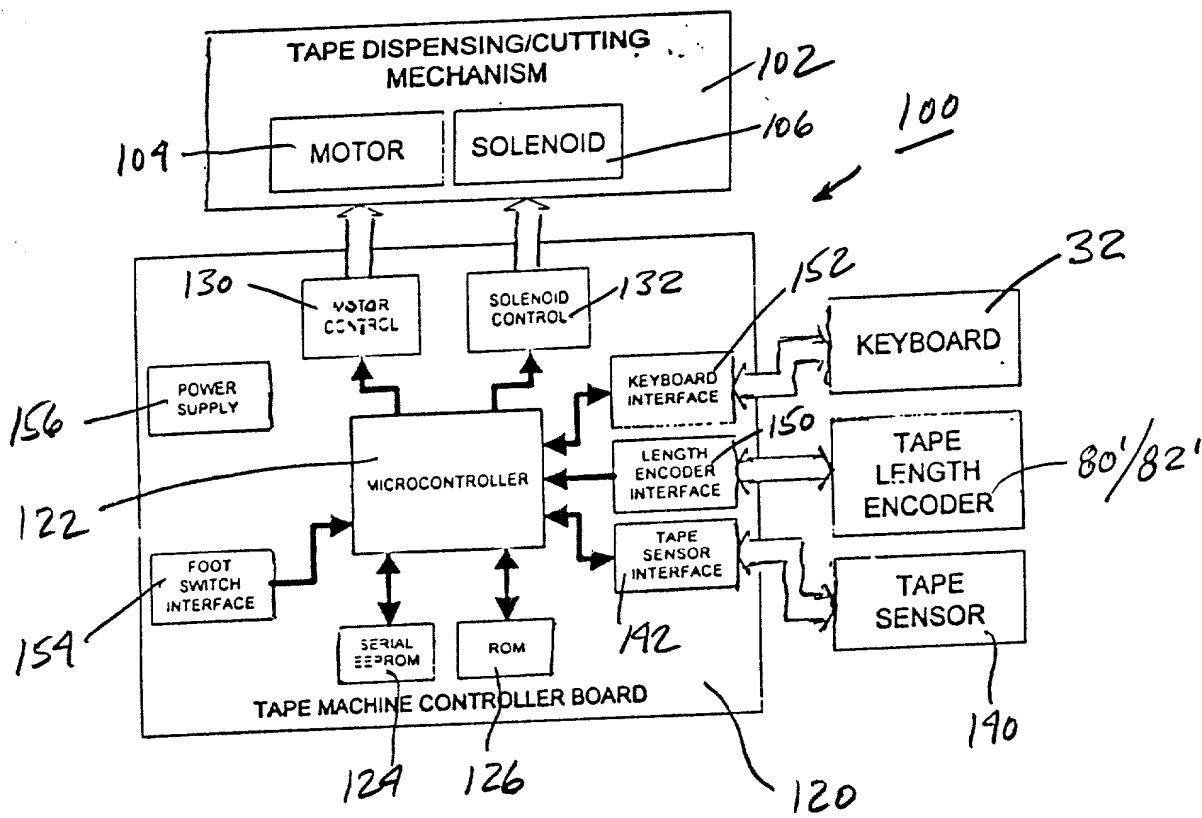


FIG. 9

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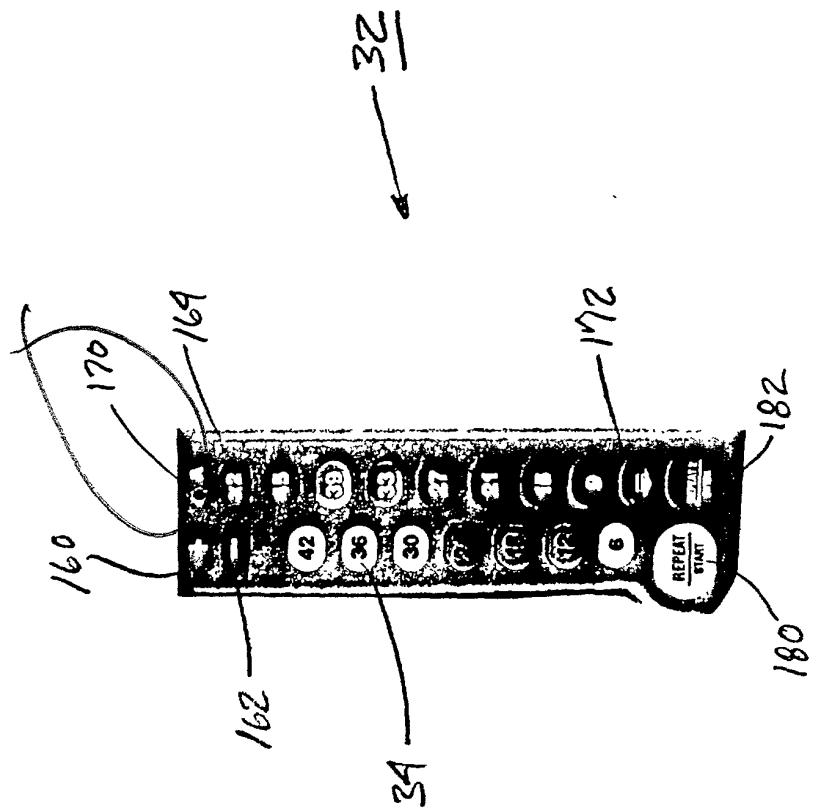


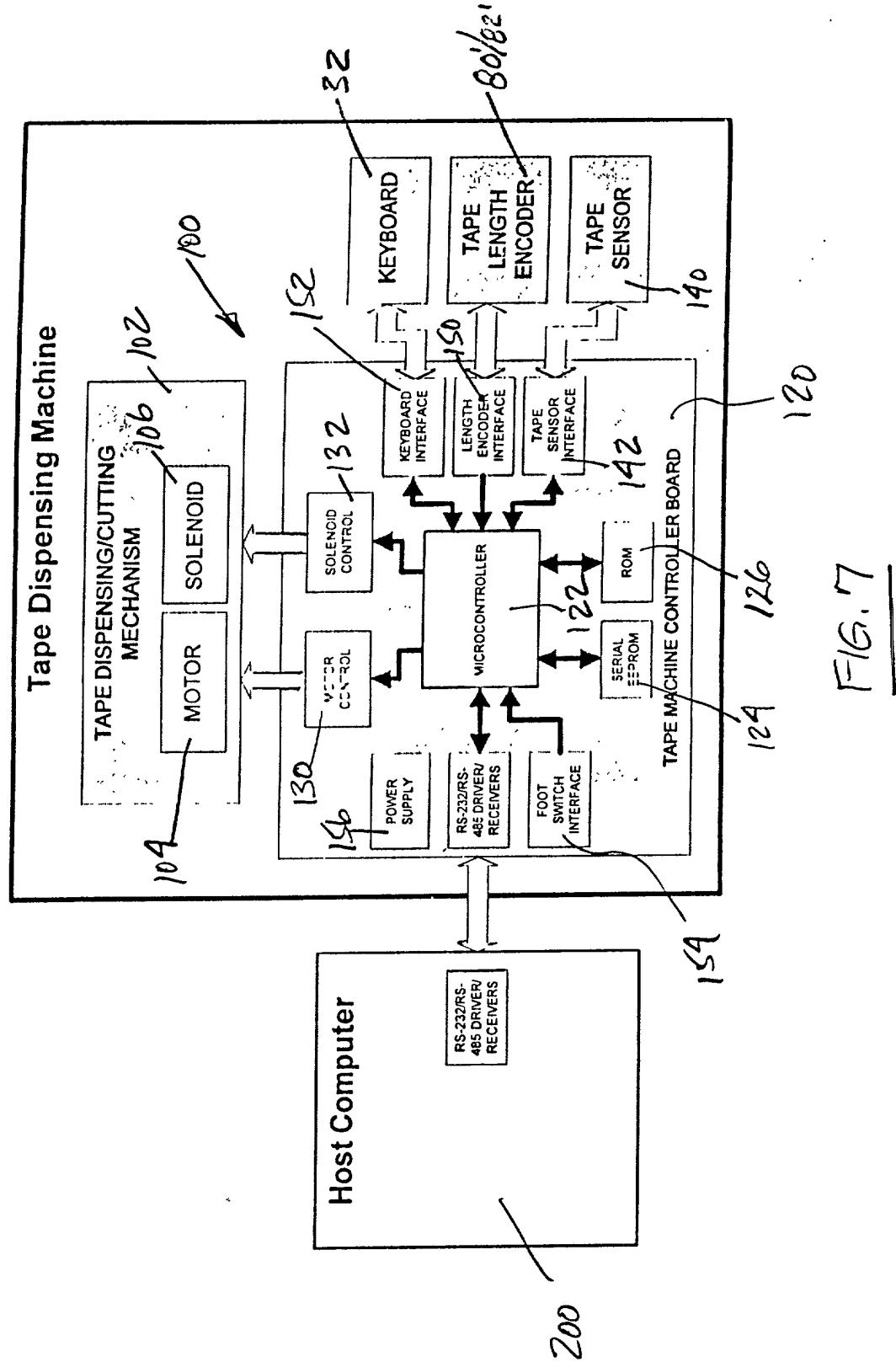
FIG. 5

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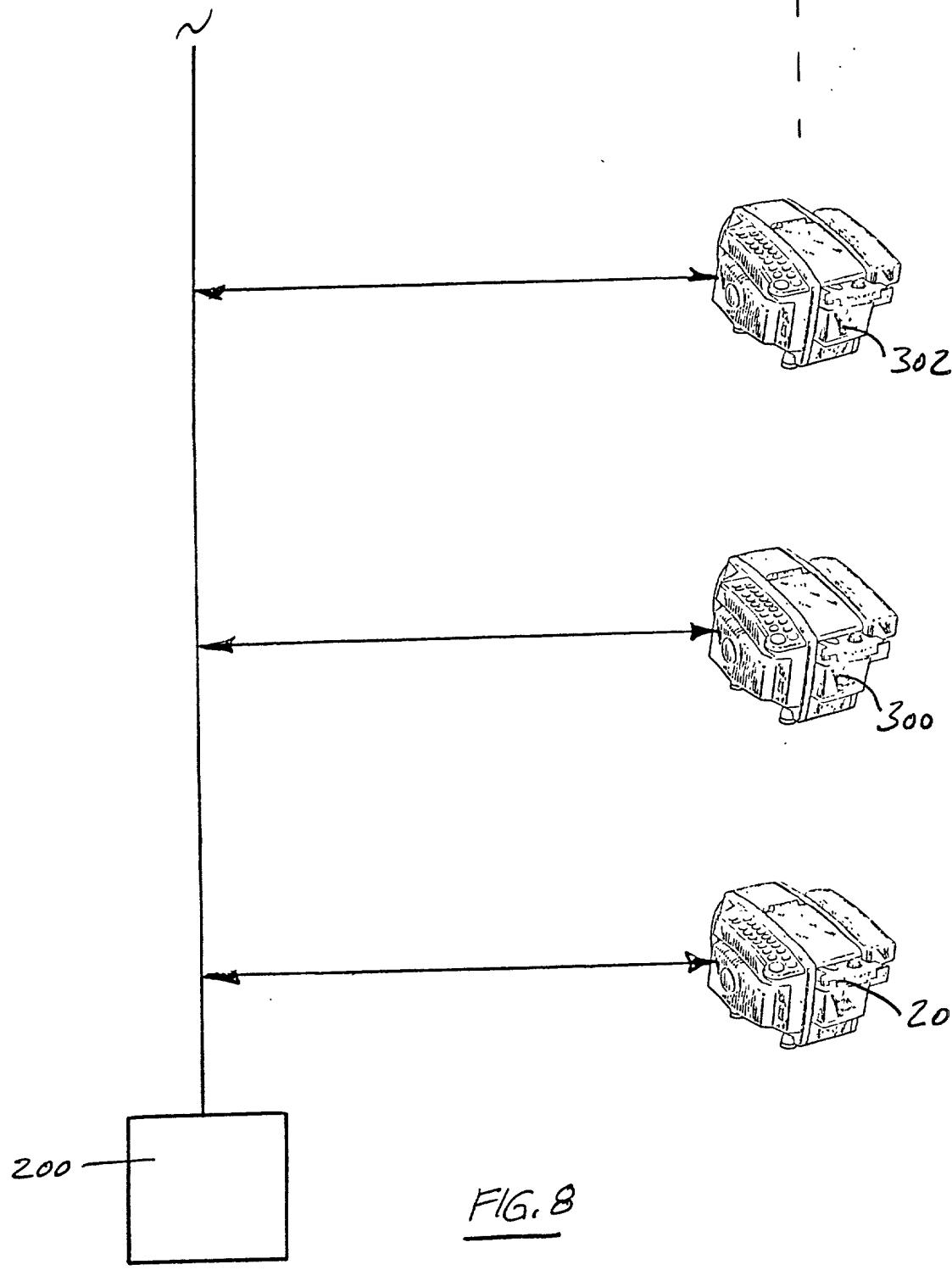
User action	Machine Response
Press "Auto"	Enter Auto mode
Press "36"	Dispense 36" tape,
Press "ENTER"	store 1 st length of sequence
Remove tape	No response
Press "18"	Dispense 18" tape, store 2 nd length of sequence
Remove tape	No response
Press "ENTER"	store 2 nd length of sequence
Press "START"	Dispense 36" tape, if tape not removed wait
Remove tape	Automatically dispense 18" tape
Remove tape	Automatically dispense 36" tape
Remove tape	Automatically dispense 18" tape
Remove tape	Automatically dispense 36" tape
ad infinitum	

FIG.6

09/889347



09/889347



DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: ELECTRONICALLY CONTROLLED SEALING TAPE DISPENSER AND METHOD

the specification of which

(check one)

- is attached hereto.
- X was filed on _____ as United States Application No.09/889,347 or PCT
International Application Number PCT/US00/01294 filed 19 January 2000
and was amended on (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International Application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

(Number)	(Country)	(Day/Month/Year Filed)	Priority Not Claimed
PCT/US00/01294	PCT	19 January 2000	<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

60/116,275
(Application Serial No.)

19 January 1999
(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.:

(Filing Date)

I hereby claim the benefit under 35 U.S.C. Section 120 of any United States application(s), or Section 365(c) of any PCT International Application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International Application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C.F.R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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Fourth inventor's signature:

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Citizenship:

Post Office Address:

Full name of fifth inventor:

Fifth inventor's signature:

DATE

Residence address:

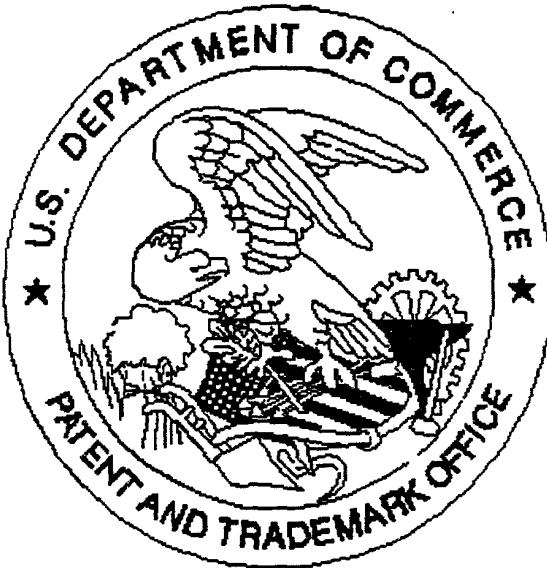
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